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# (12) UK Patent Application (19) GB (11) 2 355 134 (13) A

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(54) Abstract Title  
**A telephone credit account crediting system**

(57) A terminal (300) provided at a retail outlet has a card reader (33) for reading an identity code from a card (40), an input device (34) for enabling a retailer to input data representing the amount the cardholder wishes to credit to an account such as a pre-pay mobile telephone account, and a communication link (20a) for sending a signal carrying transaction data including identity code data representing the card identity code read by the card reader and amount data representing the amount. Apparatus (200) at a mobile telephone service provider includes a database store (24) arranged to store data associating each of a number of pre-pay mobile telephone accounts with a respective different one of a number of card identity codes and a receiver (25) for receiving transaction data communicated by the communication link. A processor (21) of the service provider apparatus (200) identifies from the database the pre-pay mobile telephone account associated with the card identity code represented by the received identity code data and credits the identified pre-pay mobile telephone account with the amount represented by the received amount data. The terminal (300) may be arranged to request deferred activation of the crediting of the account in which case the service provider apparatus (200) will issue a keycode which is communicated to the cardholder via the mobile telephone number associated with the card presented by the cardholder.

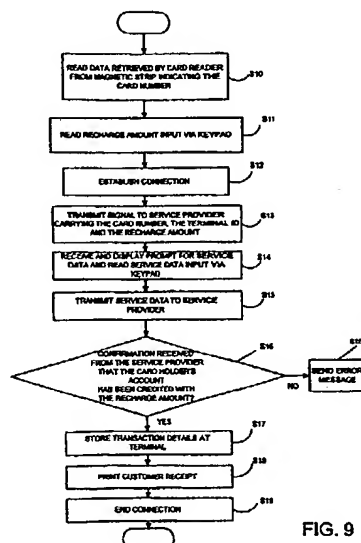


FIG. 9

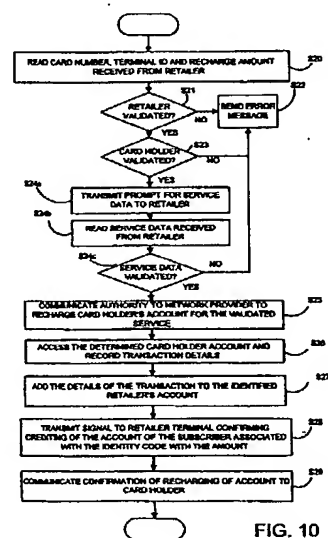


FIG. 10

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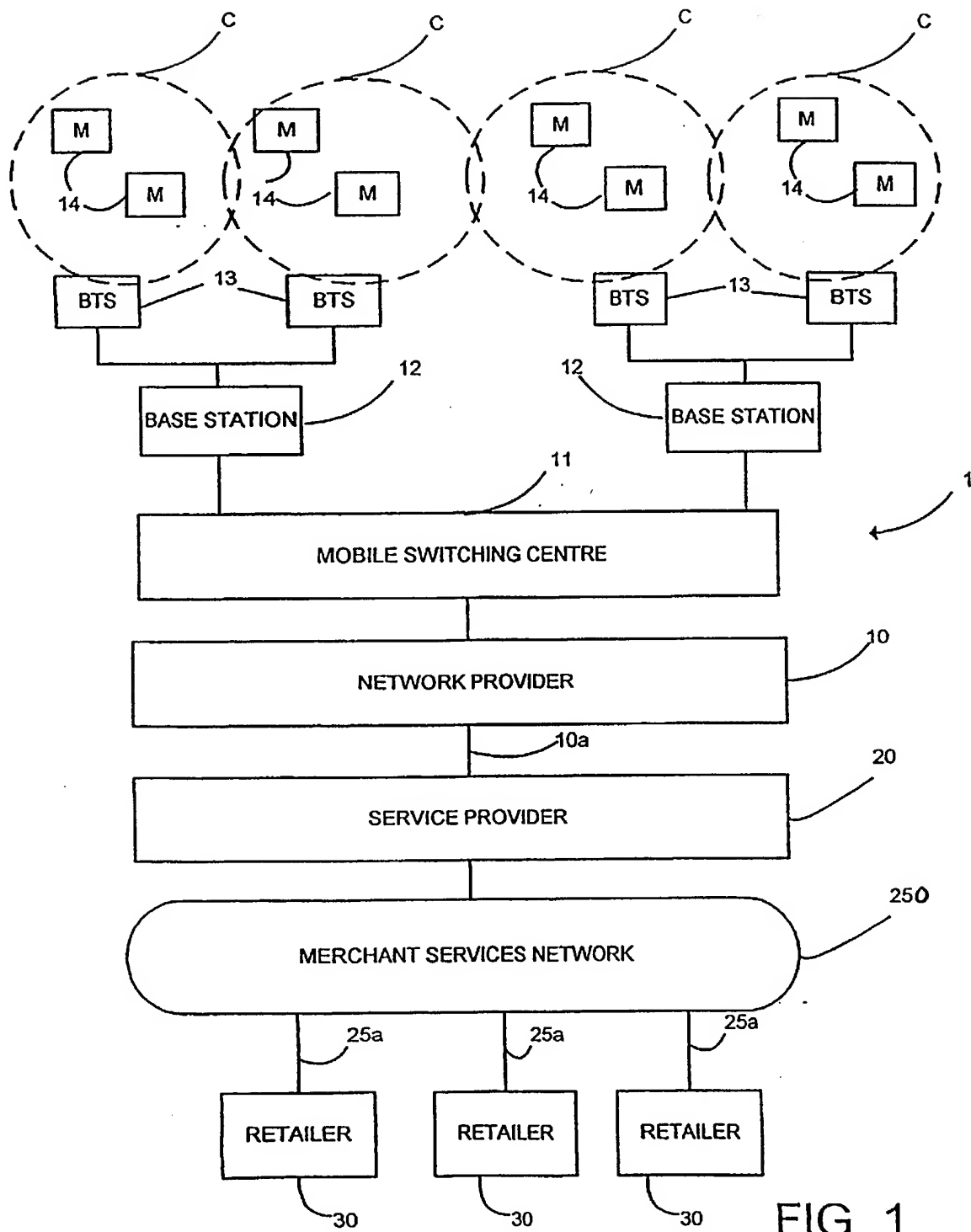


FIG. 1

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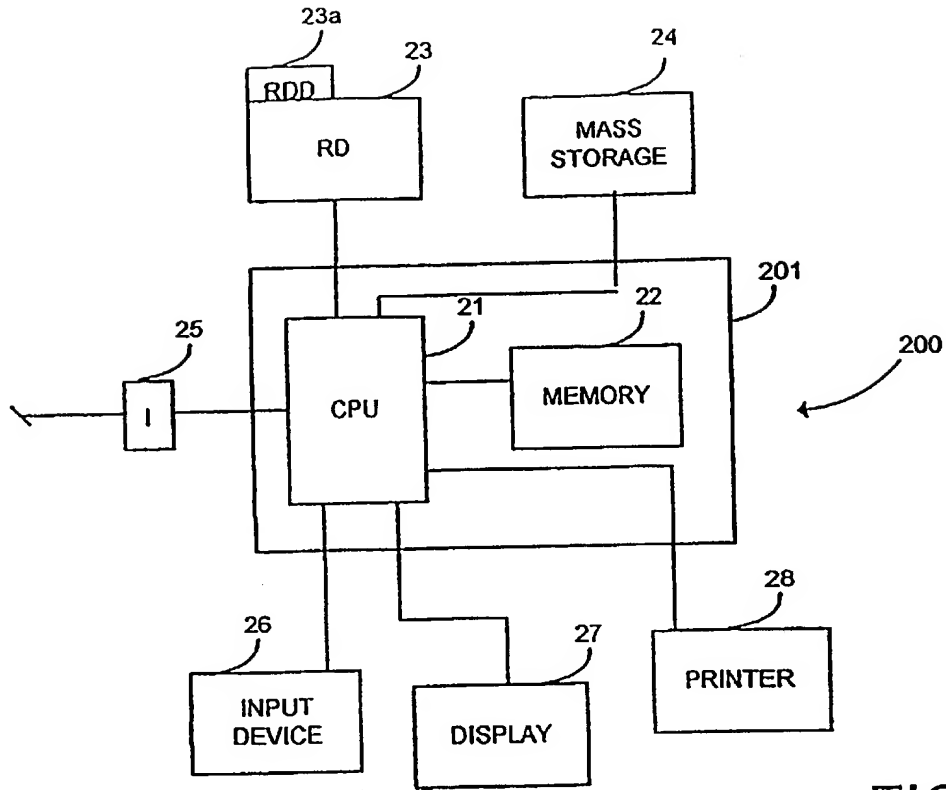


FIG. 2

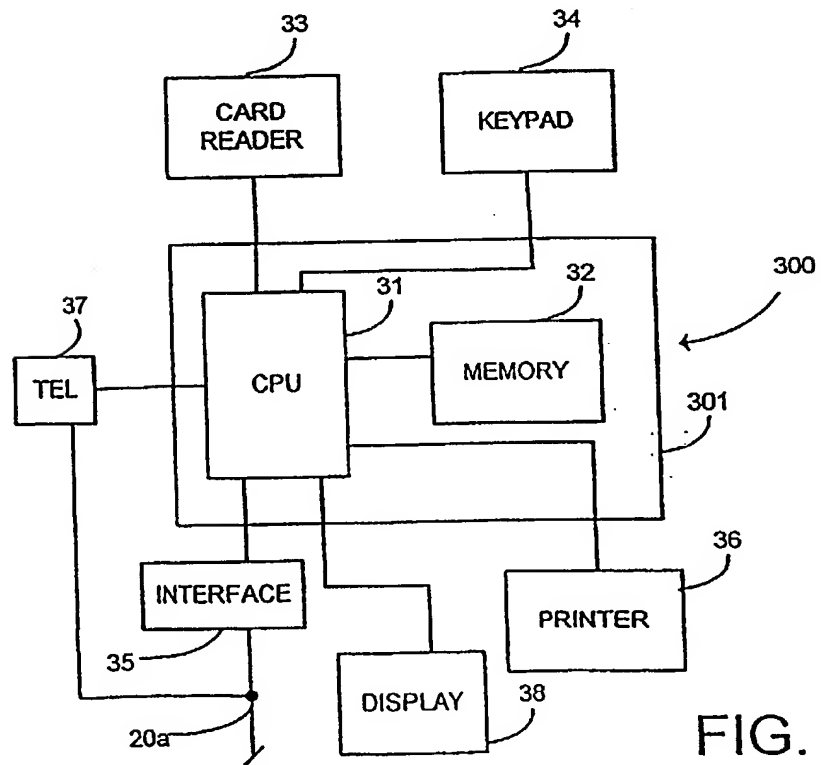


FIG. 3

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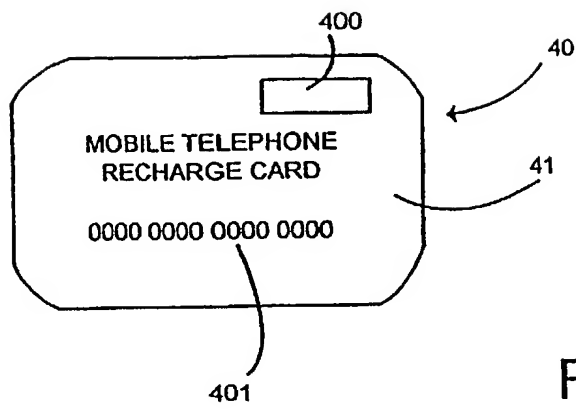


FIG. 4

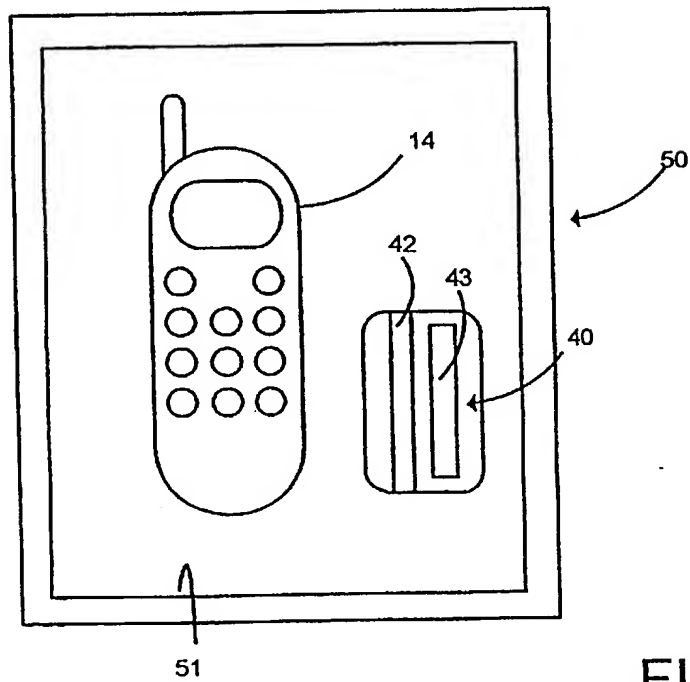


FIG. 5

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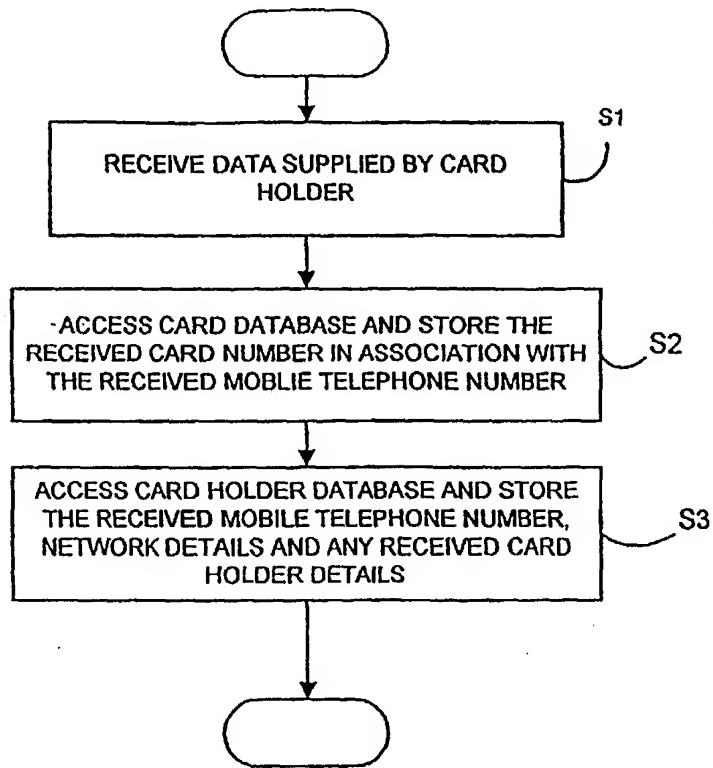


FIG. 6

CDB

RECHARGE CARD DATABASE	
CARD NO	MOBILE TELEPHONE NUMBER

FIG. 7

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CARD HOLDER DATA BASE					
CARD HOLDER	MOBILE TEL NO	NETWORK	TRANSACTION RECORD	SOURCE	PROMOTION

→  
SDB

FIG. 8

KEYCODE DATA BASE			
KEYCODE	USED?	AUTH CODE	AMOUNT AND SERVICE

→  
KDB

FIG. 10a

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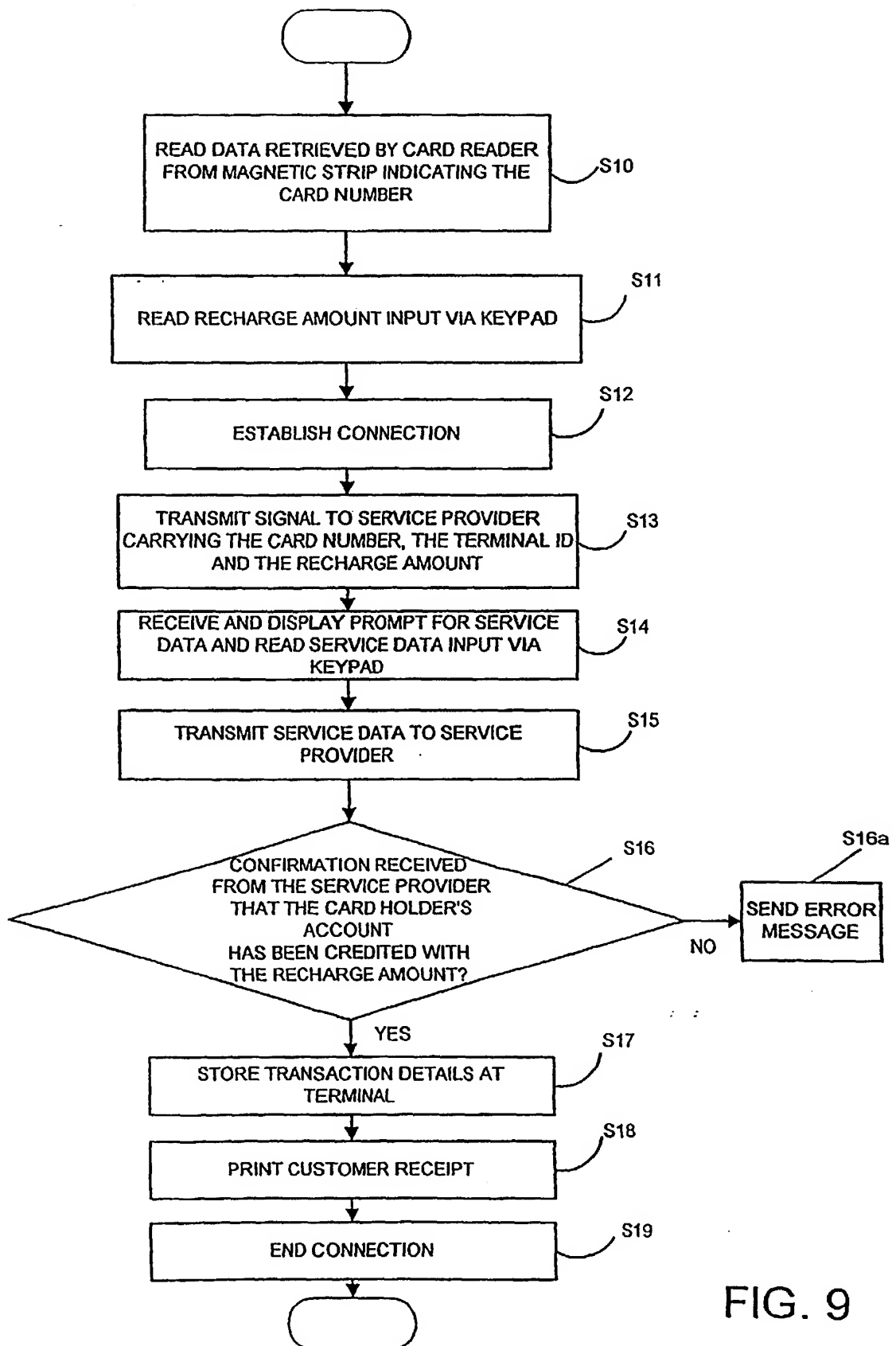


FIG. 9



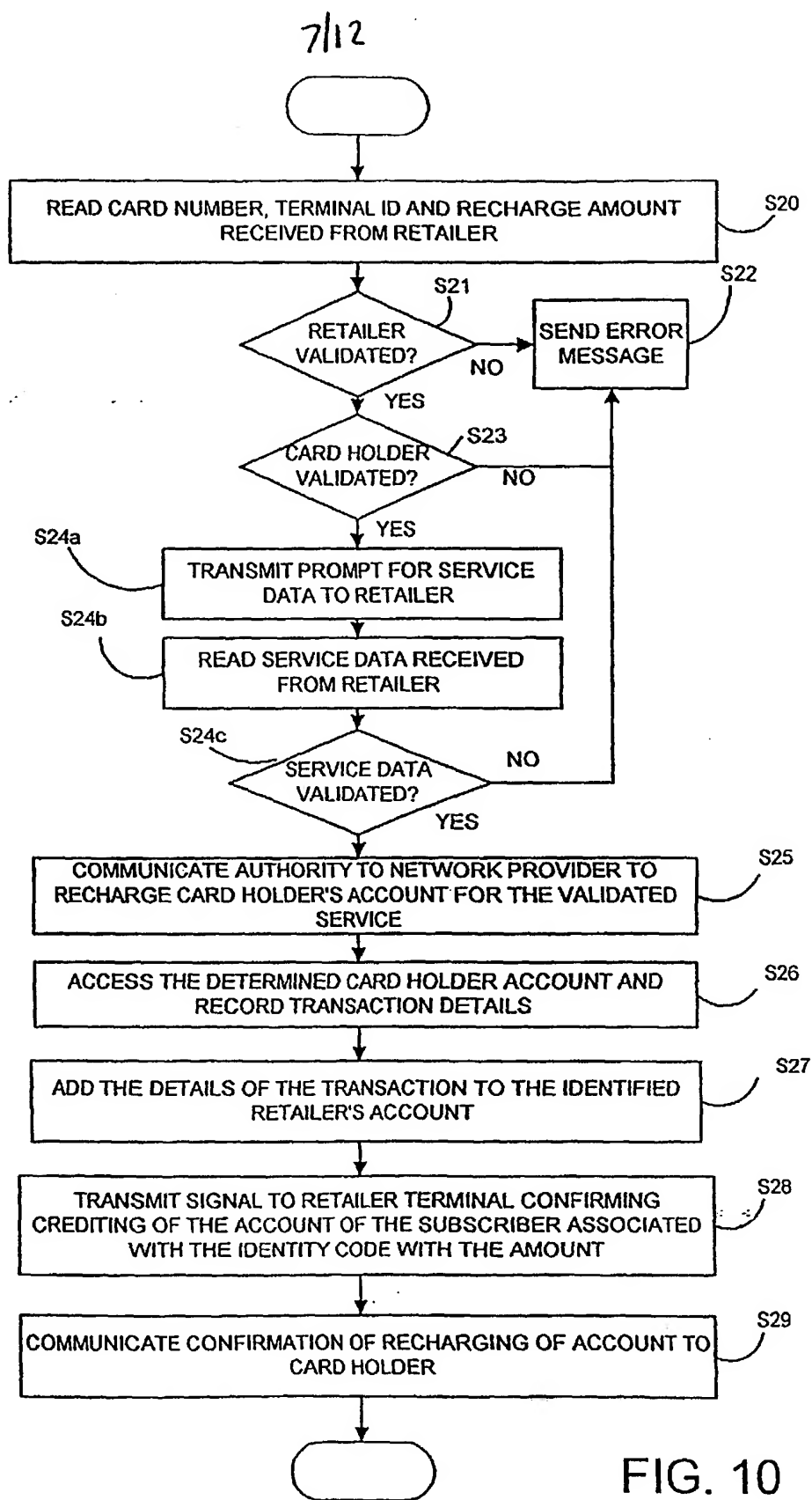


FIG. 10

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RETAILER DATA BASE		
RETAILER	TERMINAL ID	ACCOUNT

↗  
RDB

FIG. 11a

RETAILER ACCOUNT				
RETAILER	TRANSACTION DETAILS	COMMISSION	DEBIT AMOUNT	CREDIT STATUS

↗  
RA

FIG. 11b

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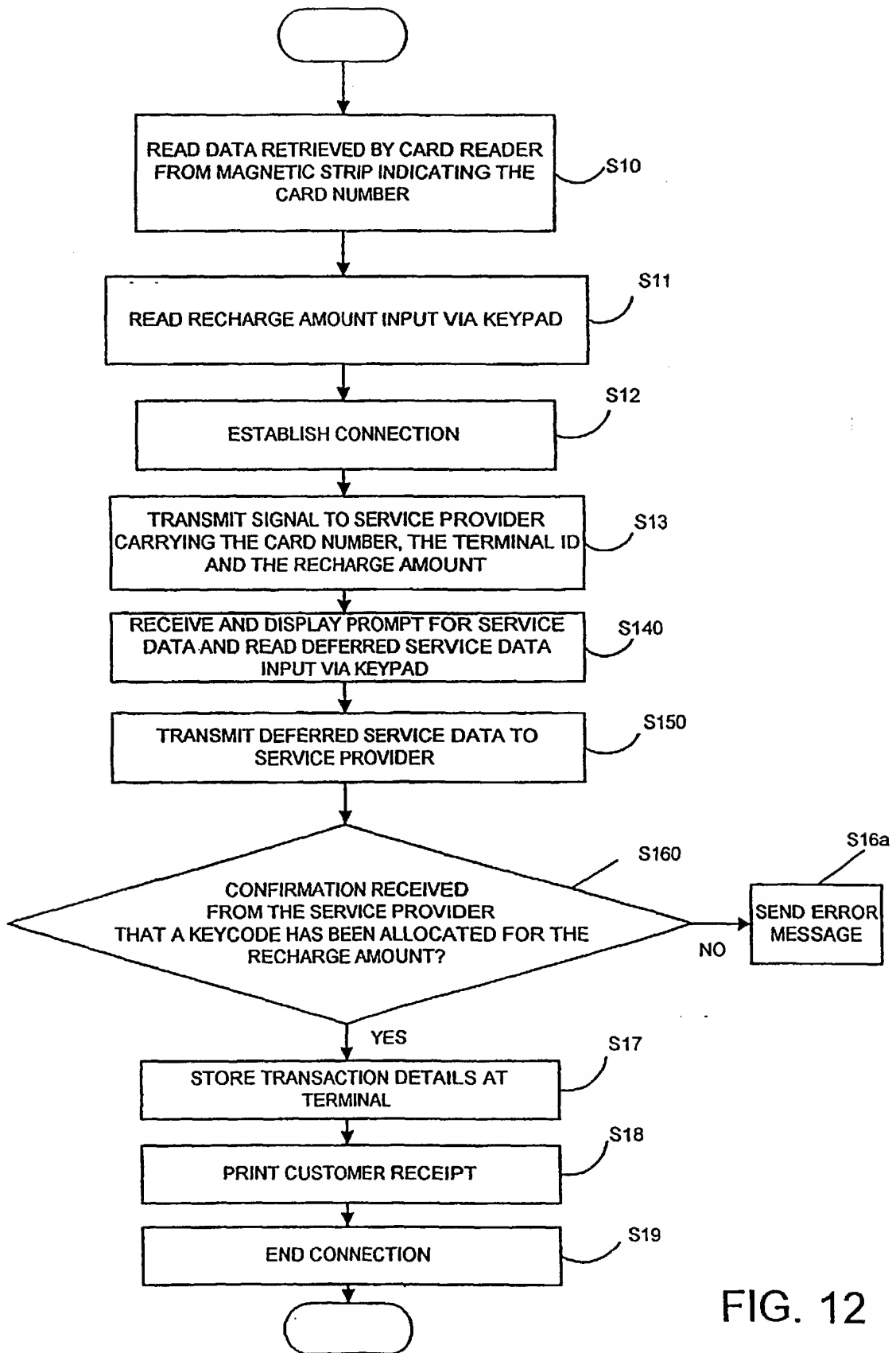
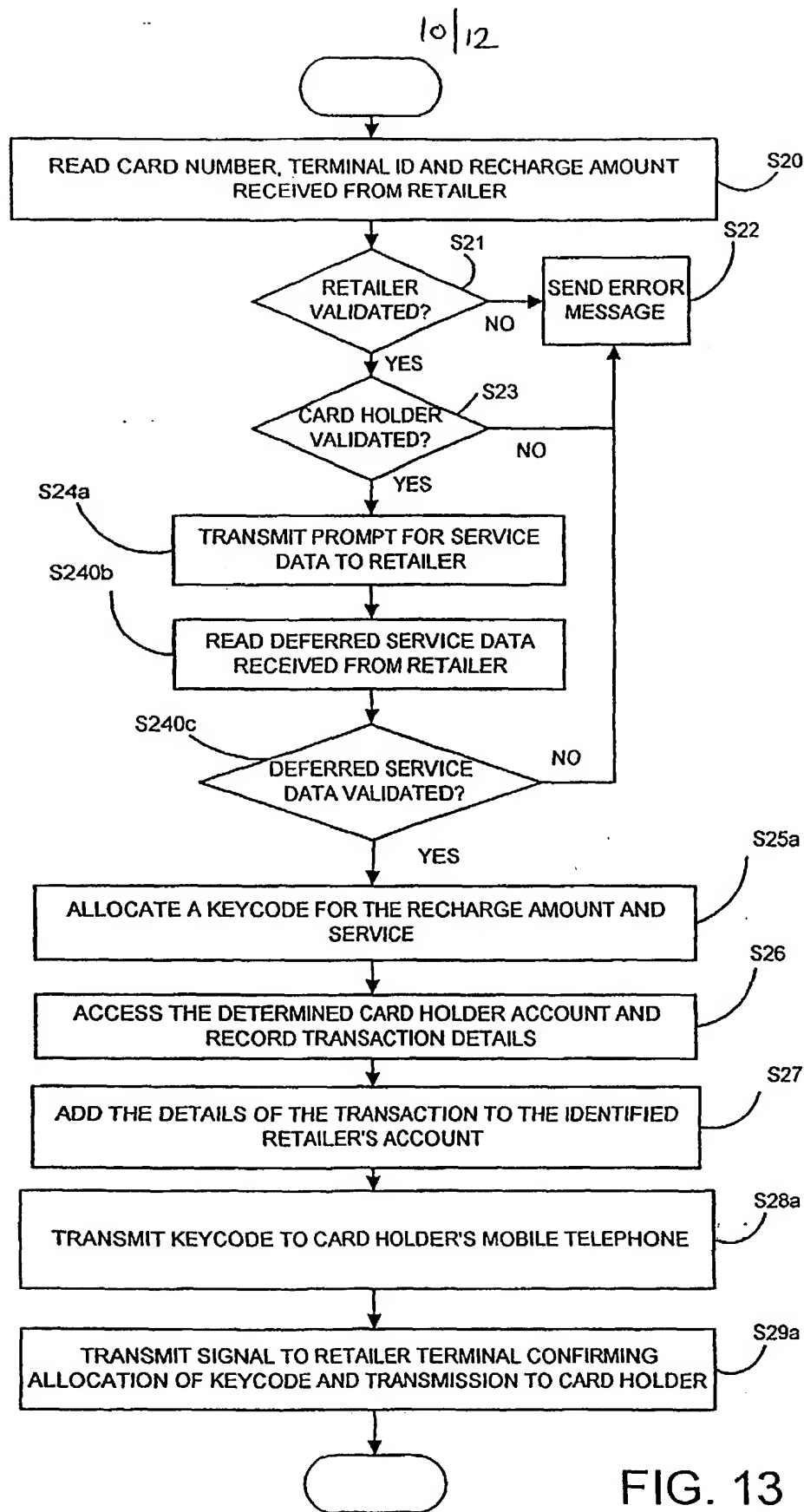


FIG. 12



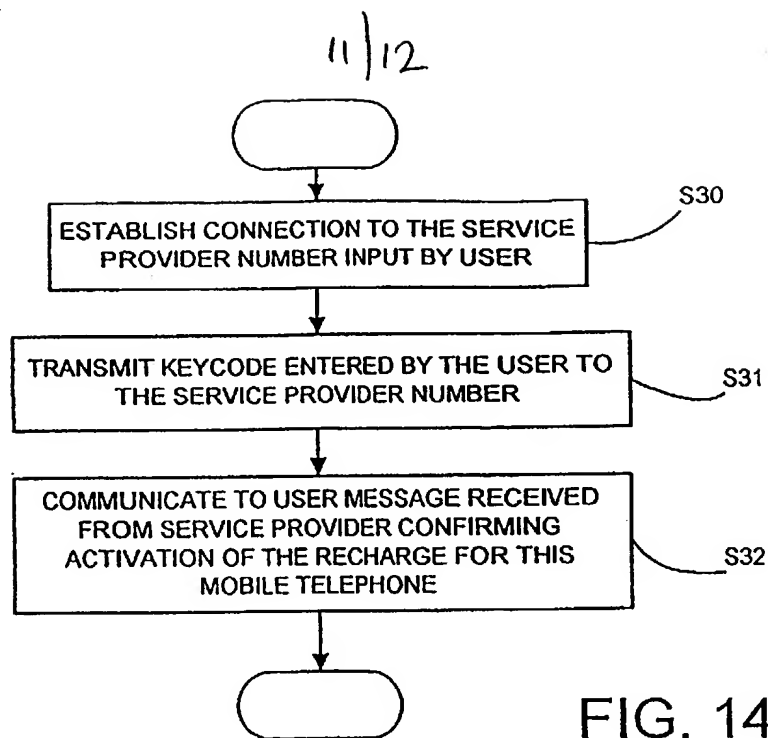


FIG. 14

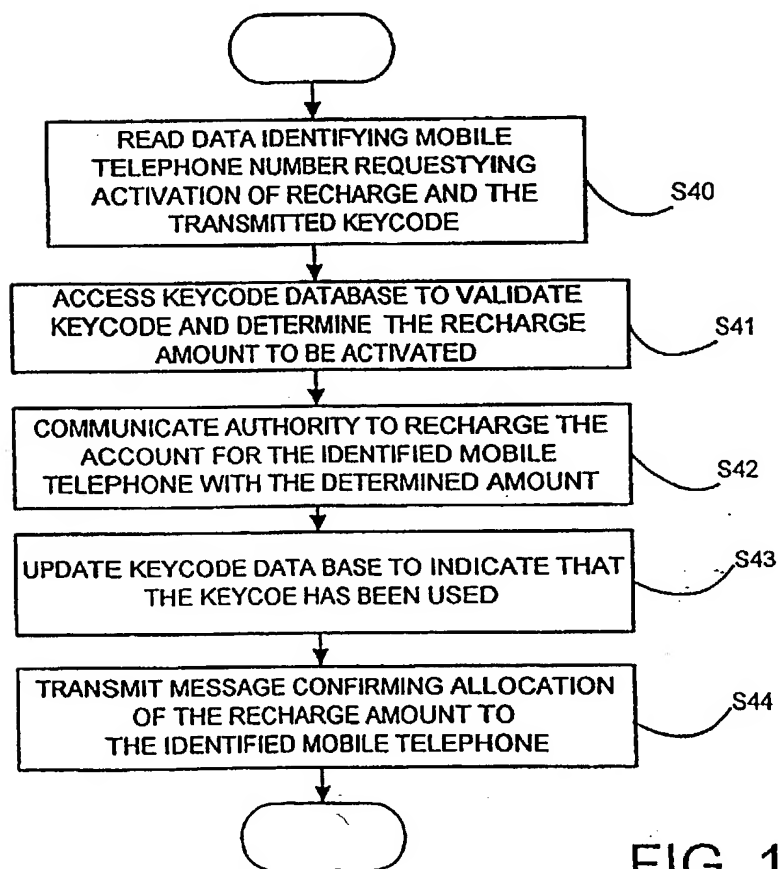


FIG. 15

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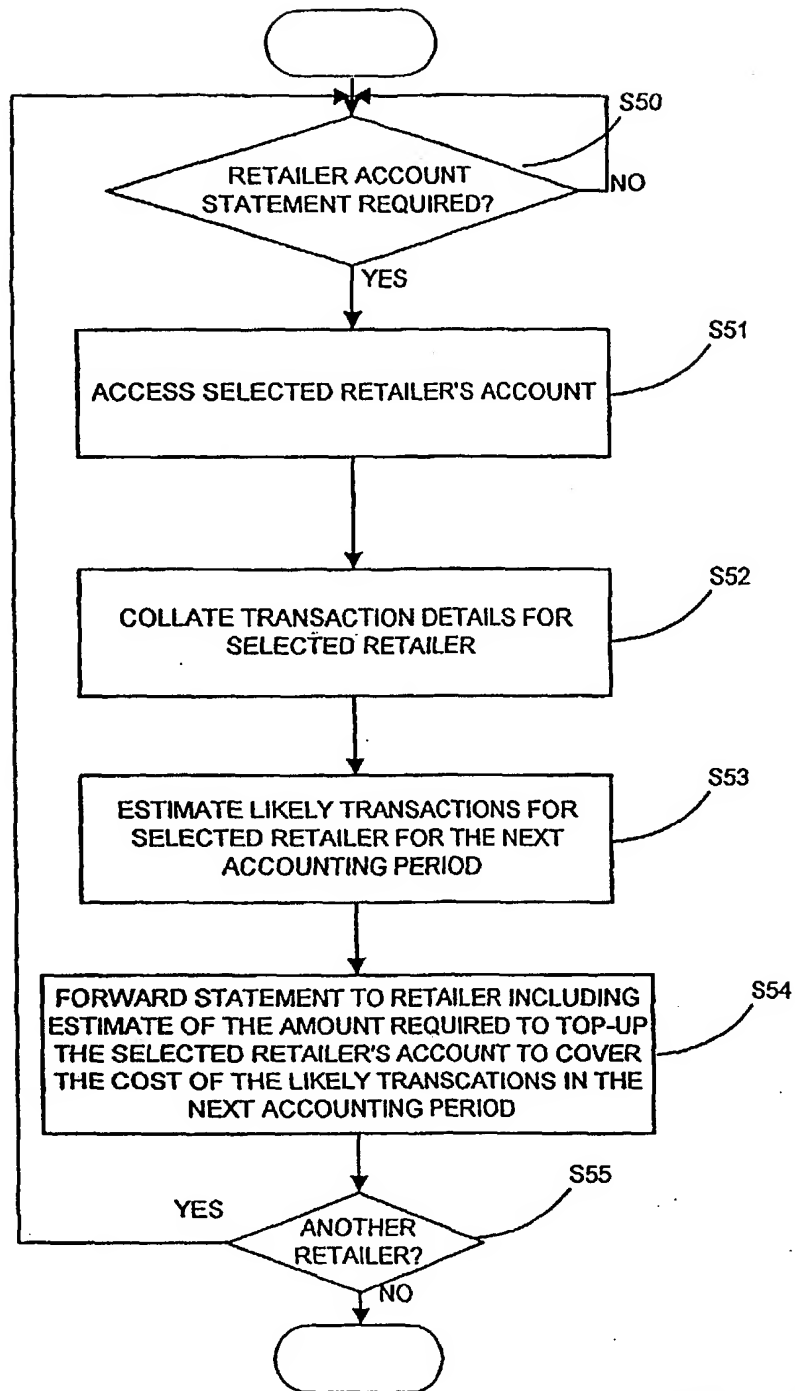


FIG. 16

AN ACCOUNT CREDITING SYSTEM

This invention relates to an account crediting system. In particular, but not exclusively, this application relates to a system for facilitating crediting of an account for future usage for a pre-pay mobile telephone.

Conventionally, the owner of a mobile telephone is granted access to a mobile telephone network operated by a network provider by a service provider with whom the mobile telephone owner has a contract. Under this contract, the mobile telephone owner receives periodically a bill which includes a standing charge and charges for the calls made from the mobile telephone. To accommodate customers who wish to pay for use of their mobile telephones as and when that use occurs, pre-pay systems have been adopted where the user pays in advance for access to the network. Under this system, the account of the mobile telephone owner must be in credit for the telephone to operate.

In order to maintain his account in credit, the user of a pre-pay mobile telephone purchases from a retail outlet a top-up card which carries a scratch panel. After purchase of the top-up card, the mobile telephone user scratches off the scratch panel to reveal a PIN (personal identity number). He then telephones the network or service provider responsible for granting him

access to the mobile telephone network and keys in the revealed PIN. On receipt of the PIN, the service provider tops up the account for that mobile telephone with a monetary sum determined by the PIN and the user  
5 can then continue to use his phone until that amount has been used up.

Such top-up cards are, however, available only in fixed monetary values so that the pre-pay mobile telephone user can only top up his account by multiples  
10 of those fixed amounts. Furthermore, this pre-pay system requires the retail outlet to purchase the top-up cards and to carry a stock for subsequent supply to customers. Currently there are twenty or more different top-up cards for different pre-pay mobile phone schemes and a retailer  
15 therefore needs to keep stocks of each of these different top-up cards or vouchers. As these vouchers have a monetary value, retention of these vouchers on the retail premises presents a potential security risk.

It is an aim of the present invention to provide  
20 apparatus for facilitating crediting or topping-up of an account such as a pre-pay mobile telephone account.

In one aspect, the present invention provides apparatus for effecting crediting or topping up of an account such as a pre-pay mobile telephone account, which  
25 apparatus comprises means for receiving a signal from a remote terminal and means for enabling crediting or topping up an account specified by the signal from the



remote terminal with an amount determined by the signal from the remote terminal.

In one aspect, the present invention provides a remote terminal arranged to be provided at a retail outlet and arranged to communicate transaction data including data specific to an account and data representing an amount to be credited to an account to transaction data receiving apparatus having means for receiving transaction data communicated by said communication apparatus and means for enabling crediting of the identified account with the amount represented by the amount data received by the receiving means.

In one aspect, the present invention provides a system for enabling crediting of an account such as a pre-pay mobile telephone account, which system comprises:

a transaction data communication terminal arranged to be provided at a retail outlet for communicating transaction data including data specific to an account and data representing an amount to be credited to an account; and transaction data receiving apparatus having means for receiving transaction data communicated by said terminal apparatus, and means for enabling crediting of the identified account with the amount represented by the amount data received by the receiving means.

The account to be credited may be specified by a card number read from a card presented to the retailer by a customer by a card reader of the terminal.

This enables the account holder, for example a pre-pay mobile telephone account holder, to top-up or add credit to his account at any outlet having a remote terminal for effecting monetary transactions, such as an  
5 Electronic Funds Transfer Point of Sale (EFTPOS) terminal conventionally used for authorising and effecting electronic transactions using debit and credit cards. The account holder can thus top-up his account at the same time as, for example, purchasing petrol (gas),  
10 groceries or other products from a retailer having such an EFTPOS terminal.

In one aspect, the present invention provides apparatus for effecting deferred crediting of an account such as a pre-pay mobile telephone account, which  
15 apparatus comprises means for receiving a signal from a remote terminal and means for issuing a keycode for activating topping up or crediting of an account by an amount specified by the signal from the remote terminal.

In one aspect, the present invention provides a  
20 remote terminal arranged to be provided at a retail outlet and arranged to communicate transaction data including data specific to an account and data representing an amount by which an account is to be credited at a later date to transaction data receiving  
25 apparatus having means for receiving transaction data communicated by said communication apparatus and means for communicating to the account holder a keycode for

activating crediting of an account with the amount represented by the amount data received by the receiving means.

In one aspect, the present invention provides a  
5 system for enabling deferred crediting of an account such as a pre-pay mobile telephone account, which system comprises:

transaction data communication apparatus arranged to be provided at a retail outlet for communicating  
10 transaction data including data specific to an account and data representing the amount by which an account is to be credited at a later date; and transaction data receiving apparatus having means for receiving transaction data communicated by said communication  
15 apparatus, and means for issuing a keycode for activating crediting of an account with the amount represented by the amount data received by the receiving means.

The account to be credited or topped up may be specified by a unique identity number read by a card  
20 reader of the communication apparatus from a card presented to a retailer by the customer.

This enables the account holder, for example a pre-pay mobile telephone account holder to effect a payment to top-up his account at any outlet having a remote  
25 terminal for effecting monetary transactions, such as an electronic transaction terminal and then later to activate that topping up by supplying the keycode to the

account provider, for example a mobile telephone service provider. A person can thus arrange for topping-up of his or another person's account at the same time as, for example, purchasing petrol (gas), groceries or other products from a retailer having such a remote terminal and the account can be credited with the amount concerned at any later time by supplying the keycode to the account provider, for example, a mobile telephone service provider.

10        Embodiments of the present invention will now be described, by way of example, with reference to the accompanying drawings, in which:

Figure 1 shows a schematic diagram illustrating a mobile telephone network arrangement;

15        Figure 2 shows a block schematic diagram illustrating functional components of apparatus provided at the service provider;

Figure 3 shows a block schematic diagram illustrating function components of apparatus provided at a retail outlet;

20        Figure 4 shows schematically a plan view of a front of a recharge card;

Figure 5 shows a schematic plan view of a package in accordance with the present invention consisting of a mobile telephone and the recharge card shown in Figure 4;

25        Figure 6 shows a flowchart illustrating registration of a recharge card with a mobile telephone service

provider;

Figures 7 and 8 show diagrammatically a recharge card database and a card holder database, respectively;

Figure 9 shows a flowchart illustrating the operations carried out by the retail apparatus shown in Figure 3 to facilitate crediting or topping-up of the account of a pre-pay mobile telephone user;

Figure 10 shows a flowchart for illustrating operations carried out by the service apparatus to enable topping-up of the account of a mobile telephone owner;

Figure 10a shows diagrammatically a keycode database;

Figures 11a and 11b illustrate diagrammatically and respectively a retailer database and a corresponding retailer account stored by the service apparatus;

Figures 12 and 13 show flowcharts for illustrating, respectively, the operations carried out by the retail apparatus and the service apparatus to enable deferred topping-up of the account of a mobile telephone owner;

Figures 14 and 15 show flowcharts illustrating steps carried out by a mobile telephone and the service apparatus for activating a deferred top-up of the account for that mobile telephone; and

Figure 16 shows a flowchart illustrating operations carried out by the service apparatus to collect money from a retailer.

Referring now to Figure 1, there is shown a mobile

telephone network arrangement (1) which comprises a network provider (10) which administers and controls the mobile telecommunications network which is, in this example, a GSM (Global System Mobile) digital cellular communications network the details of which are well known and will not be described in detail herein.

The network provider (10) is connected via communication links to a number (only one is shown) of mobile switching centres (11). Each mobile switching centre (11) serves a geographical area and is coupled via communication links to a number of base station controllers (12) (only two are shown) which are distributed throughout the areas served by the mobile switching centre (11). Each base station controller (12) is coupled via communication links to a number of base transceiver stations (BTS) (13) (two are shown for each base station). Each base transceiver station (13) serves an area or cell C of the network and is arranged to transmit radio signals to and receive radio signals from mobile telephones (14) within its area or cell C in accordance with the GSM digital network protocol.

Although not shown in Figure 1, each mobile switching centre (11) is also coupled to other mobile switching centres in the same network and to mobile switching centres in other mobile telecommunications networks and to fixed telecommunication networks. The phrase "fixed telecommunications network" refers to a

telecommunications network wherein the network provider is coupled to a number of central switching stations each coupled by cable or optical links to fixed line telephones. The fixed line telephones may be physically  
5 connected to the optical or cable links or, as is known in the art, connected to a base station coupled to the optical or cable link via a radio or other remote link which enables the telephone to be moved around within, for example, the building to which the telephone line  
10 connection is provided.

The network provider (10) is connected via a communication link (10a) in Figure 1 to a service provider (20). As is known in the mobile telecommunications field, the service provider (20)  
15 provides a link between the end mobile telephone user and the network provider so that the mobile telecommunications services provided to the end mobile telephone user are administered by the service provider to whom payment is made by the end user for use of the  
20 mobile telecommunications services. The service provider (20) in turn pays the network provider (10) for use of the network facilities. As is also known in the mobile telecommunications field, the network provider may also be the service provider.

25 In a system in accordance with the present invention the service provider (20) is coupled via a merchant services network (250) and communication links (25a) to

a number of retailers or retail outlets (30) as will be described in detail below.

The merchant services network (250) is, in this example, provided by one or more of the existing merchant  
5 service providers that administer electronic transfer of funds using Electronic Funds Transfer Point of Sale (EFTPOS) terminals located at the retailers (30).

Figure 2 shows block schematically an example of service apparatus (200) provided at the service provider  
10 (20). The apparatus (200) comprises a main processing unit (201) having a central processing unit (21) and associated memory (22) which may be, for example, ROM and/or RAM. The main processing unit (201) may be based on a mini computer system such as a DEC Alpha system.

15 The main processing unit (201) is connected to a mass storage device (24) which may consist of, for example, a hard disc drive or series of hard disc drives. The mass storage system (20) provides, as will be described below, a database store for storing  
20 information. Although not shown in Figure 2, generally the main computer system (200) will be coupled via a communications interface (25) to a number of terminals, generally personal computers, which enable operators to access information stored in the database store (24) and,  
25 where the operator has the appropriate authority and password, to add or alter information stored in the database store. The communications interface (25) also



enables communication with the network provider (10) to enable information regarding the usage by the users of the mobile telephone network to be input to the database store. Any appropriate form of communication interface  
5 between the network and service providers may be used. For example, the communication interface (25) may be provided by any one or any combination of a local or wide area network (LAN or WAN), the Internet, an intranet, a fixed line or a modem connection. The communication  
10 interface with the operator terminal will generally be a LAN or WAN network. However, any of the other forms of communications interfaces described above may be used.

The service apparatus (200) also has a user operable input device (26) which may consist of, for example, a  
15 keyboard and a pointing device such as a mouse. A removable disc (RD) drive (23) is also associated with the CPU (21) for receiving a removable disc (RDD) (23a) such as a floppy disc or CDROM for enabling processor implementable instructions and data to be downloaded to  
20 the main processing unit to cause the main processing unit to be configured to form the service apparatus. Processor implementable instructions and/or data may also be downloaded to the main processing unit as a signal S via the communications interface (25). Data from the  
25 database store stored in the mass storage device (24) may be downloaded onto a removable disc (23a) or supplied as a signal S via the communications interface (25).

Similarly, processor implementable instructions and/or data may be downloaded from the main processing unit memory onto a removable disc (23A) or as a signal S over the communications interface (25).

5       The communications interface (25) also communicates with the merchant services network (250). Generally, this communication will be via fixed telephone lines although mobile telephone communications or any of the other communications systems discussed above may be used.

10       Figure 3 shows block schematically the terminal or apparatus (300) present at the retail outlets (30). This apparatus (300) will generally consist of a conventional Electronic Funds Transfer Point of Sale (EFTPOS) terminal such as is currently used in retail outlets for enabling,  
15       via the merchant services network, automatic transmission and authorisation of credit and debit card transactions with the credit and debit card providing companies. As shown in Figure 3, the apparatus (300) consists of a main processing unit (301) having a CPU (31) with associated  
20       working memory (32) such as ROM and/or RAM. The main processing unit (301) is associated with a card reader (33) for reading the magnetic strip on credit and/or debit cards, a keypad (34) for enabling the retailer or sales assistant to key in information to be transmitted  
25       to the credit/debit card company together with the information read by the card reader (33), a printer (36) for printing receipts for transactions, an interface (35)

for connection with the communication link (20a) and generally also a telephone (37) for enabling the sales assistant to contact the credit or debit card company directly should there be any problems concerning a transaction, and a display (38) for messages. The interface (35) generally provides a link to a fixed line telephone system.

In the present system, the apparatus (300) shown in Figure 3 is also used to enable a pre-pay mobile telephone user to automatically recharge, that is credit or top-up, his mobile telephone account.

In order to recharge his mobile telephone, the pre-pay mobile telephone owner uses a mobile telephone recharge card (40).

Generally the recharge cards (40) will be supplied free of charge and may be made available to potential card holders by a number of different routes. For example, the recharge cards may be stocked by high street or out-of-town retailers such as supermarkets or petrol stations, may be given away inside magazines or packaged goods or on the front cover of magazines or on product packaging or may be supplied directly via the service provider to the potential card holder's home.

As shown in Figure 4, the mobile recharge card (40) consists of a plastics material card (41) carrying on its front face information (400) identifying the service provider (20) and including a registration telephone

number. Where the recharge card (40) is supplied by somebody other than the service provider (20), for example by a retailer or on a magazine cover, then the front face of the recharge card (40) may also carry  
5 information identifying or advertising the retailer or magazine. For example, the front face of the card may carry a company logo or logos. The front face will also carry information identifying the card as a mobile telephone recharge card. The front face of the recharge  
10 card (40) also carries an embossed number (401) unique to the particular card. The rear face of the card carries, as indicated in Figure 5, a magnetic strip (42) and optionally an area (43) for receiving the signature of the card holder. The magnetic strip (42) carries data  
15 representing the card number. This data may be encoded or encrypted so that it can only be retrieved by decoding or decryption at the service provider (20).

As illustrated diagrammatically in Figure 5, a recharge magnetic strip card (40) may also be supplied  
20 together with a mobile telephone (14) in a single retail box or package (50) as shown in Figure 4. In the example shown the package is a cardboard package with a transparent plastics material window (51).

Initially a recharge card (40) will be inactive. In  
25 order to activate a recharge card (40) the card holder needs to register the card with the service provider (20).

Figure 6 shows a flowchart for illustrating activation of a recharge card (40). Initially, the card holder calls the registration telephone number supplied on the recharge card (40) and then follows telephone  
5 instructions to enable the service provider (20) to obtain the required information. At a minimum, this information consists of the card number, the mobile telephone number and the associated network provider (10) which will generally be determined by the service  
10 provider from the mobile telephone number. The card holder may also be asked to provide personal details such as his name and address although this would not generally be mandatory. Potential card holders may be offered, via advertising or information carried on the freely supplied  
15 recharge cards themselves, inducements such as gifts or the like to register a recharge card. A card holder calling to register his card may be connected to a human operator at a call centre of the service provider (20) who obtains the necessary information from the caller and  
20 then enters this information into the service apparatus (200) using the input device (26) or the caller may be connected to an interactive voice response registration process in which the caller follows a number of instructions so as to enable the service apparatus (200)  
25 to retrieve the required information which may then be downloaded into the CPU (21). The recharge card may also carry an Internet web address to enable registration via

the Internet using the interface (25) of the service apparatus (200).

As shown in Figures 7 and 8, the mass-storage (24) includes a card database CDB having fields for receiving  
5 card numbers and associated mobile telephone numbers and a card holder database SDB having fields for receiving information such as the name and address of the card holder (as noted above, this field may be left blank) and fields for receiving mobile telephone numbers, the  
10 associated networks and a record of transactions so that each card number is associated with a mobile telephone number in the card database and each mobile telephone number is associated in the card holder database with its corresponding network and a record of the times, dates  
15 and amounts of usage of the card. A single mobile telephone number may be associated with a plurality of different cards, in which case the data stored in the mobile telephone number fields in the recharge card and card holder databases CDB and SDB may have a separate  
20 entry for each card with each separate entry being uniquely identifiable so that separate transaction records can be kept for each card. Also, a single card may be associated with a plurality of mobile telephone numbers so that use of the card recharges a mobile  
25 telephone account shared by those mobile telephone numbers.

At step S1 in Figure 6, the CPU (21) receives the

data provided by the card holder including data identifying his mobile telephone number and the number on the associated recharge card. At step S2 in Figure 6, the CPU (21) accesses the card database CDB and stores the received card number in association with the received mobile telephone number and at step S3 the CPU (21) accesses the card holder database SDB and stores the mobile telephone number and its associated network in the corresponding fields and also stores any personal details provided by the card holder. The card holder database SDB also has a field for containing information regarding the source of the card (for example whether the card was obtained from a retail outlet, via a magazine or was supplied directly to the customer's home). This information may be derived from the card number if part of the card number identifies the card's source. This information may be used by the service provider to determine which of the card sources are most successful and to decide on promotion schemes to encourage or reward card sources.

A method of recharging a mobile telephone account using the recharge card (40) will now be described with reference to Figures 9 to 11.

In order to top up his pre-pay mobile telephone account, the card holder visits any retail outlet which has entered into an agreement with the service provider (20) to provide this facility for topping up of pre-pay

mobile telephones. The retail outlet may be a high street store such as a mobile telephone retailer, a newsagent, grocer or general store or an out-of-town store such as a supermarket or the like or, for example, a petrol or gas station. Any retail outlet having access to a conventional electronic EFTPOS terminal may enter into an agreement with the service provider (20) to provide facilities for topping up of pre-paid mobile telephones. As in the case of credit/debit cards, the retail outlet may advertise by signs in its window or the like the fact that it provides facilities for topping up of pre-paid mobile telephone accounts using recharge cards.

When the card holder enters such a retail outlet he presents the retailer or sales assistant with his recharge card (40) and advises the retailer of how he wishes to top up his pre-pay mobile telephone account.

Generally the amounts by which a mobile telephone account can be topped up will be fixed or determined by the service provider so that, for example, it may be possible to recharge the mobile telephone account in multiples of a fixed minimum currency value, for example five pounds sterling or in fixed integral pounds sterling values. The service provider may also enable the customer to select independently which service on his mobile telephone account he wishes to recharge or this may be determined by the amount by which the customer



wishes to recharge his account. For example, recharge amounts below a minimum value may be used to top up the amount of pre-paid call usage while higher recharge amounts may also be used to pre-pay for monthly or other  
5 periodic service fees in addition to topping up call usage. In addition, where the mobile telephone service enables different types of calls to be differentiated, the service provider may enable the card holder to select the type of call usage so that, for example, the recharge  
10 amount can be directed specifically toward local or international calls, for example.

The retailer then takes payment. This payment may be made in cash, by cheque, by credit/debit card or on the basis of any promotional scheme operated by the  
15 retailer. For example, the retailer may offer promotions where a customer can top up their pre-pay mobile phone account by a certain sum when purchasing certain other items or may operate a loyalty card or other system where the customer may acquire points, stamps or vouchers that  
20 can be used to effect payment for topping up of a mobile telephone account as a result of previous purchases made at that retail outlet. Thus, whether or not a retailer requires payment and, if so, the amount and the manner in which that payment is made is determined solely by the  
25 retailer.

Once the retailer has agreed the manner and amount of payment required for the recharging of the pre-paid

mobile telephone account, the retailer swipes the card holder's recharge card (40) through the card reader (34) and keys in via the keypad (34) the monetary amount by which the retailer has agreed to top up the card holder's pre-paid mobile telephone account and the service to be recharged by that amount.

Figures 9 and 10 show flowcharts illustrating the operations carried out by the CPU (31) and the service apparatus CPU (21), respectively, to top-up the pre-pay mobile telephone user's account.

At step S10 in Figure 9, the CPU (31) waits for the retailer to swipe the recharge card (40) through the card reader (33) and reads the card number data retrieved by the card reader (33) from the magnetic strip on the card (40).

At step S11, the CPU (31) reads data input by the retailer via the keypad (34) identifying the monetary amount (the recharge amount) by which the pre-pay mobile telephone account is to be topped up. It will, of course, be appreciated that steps S10 and S11 may be carried out in reverse. Once steps S10 and S11 have been completed, the EFTPOS terminal retrieves, using the part of the card number identifying the service provider, from its memory the telephone number for the service provider and automatically dials the service provider (20). Once connection has been established at step S12, the terminal

(300) transmits via the interface (35) and the merchant services network (250) a signal to the service provider (20) carrying the card number, the recharge amount and the identity of the retailer's terminal (the terminal ID) which is added automatically by the terminal. This signal itself may be encoded or encrypted in known manner.

As is known by the person skilled in the art, debit/credit card companies that use the merchant services network provided via the EFTPOS terminals generally have floors or ceilings of monetary values up to which transactions can be effected without authorisation. In the present case, the floor limit for the recharge card is set to zero so that authorisation is required for all transactions.

At step S14, the CPU (31) receives from the service provider (20) and displays to the retailer on the display 38 data prompting the retailer to enter service data identifying the service for which payment was made and then reads the service data entered by the retailer using the keypad 34. Generally, the service data will be supplied by the retailer keying in the appropriate one of a number of predefined codes supplied to the retailer by the service provider and each associated with a particular service item. Alternatively, if the display has sufficient space, the displayed prompt may identify the services and associated codes. At step S15 the CPU

(31) causes this service data to be transmitted to the service provider. At step S16, the CPU (31) waits for confirmation from the service provider (20) that the pre-pay mobile telephone account has been topped up by the required amount. If no confirmation is received at step S16, then the CPU (31) sends at step S16a an error message to the retailer. This error message may, for example, be displayed to the retailer on the display (38) of the terminal (300). When such an error message is received, the retailer may re-enter the transaction.

When the answer at step S16 is yes, the CPU (31) may optionally store the details of the transaction in its memory (32) at step S17. These details will include the time and date (as determined by the CPU's (31) internal clock), the recharge card number, the amount of the transaction and an authorisation code provided by the service provider for the transaction.

At step S18, the CPU (31) causes the terminal (300)'s printer (36) to print a customer receipt for the card holder so that the card holder has a record of the amount by which he has topped up his mobile telephone account. This printed customer receipt will, like the receipt provided for a debit/credit card transaction by the terminal, include the date, time, amount of and authorisation code for the transaction and will also identify the retail store at which the transaction was made and the card used to carry out the transaction. The

receipt, in particular the authorisation code, may be used by the customer to check any queries concerning the transaction with the service provider (20). As is usual with such terminals, a duplicate copy of the customer  
5 receipt may be printed for the retailer's records. At step S19 the terminal terminates the connection to the service provider.

Figure 10 shows the operational steps carried out by the CPU (21) of the service apparatus (200) once  
10 connection has been established via the merchant services network (250) with the terminal (300) of a retailer.

At step S20, the CPU (21) reads data received from the retailer terminal (300) including the terminal ID, the card number and the recharge amount. As mentioned  
15 above, this data may be transmitted in encoded or encrypted form.

After decoding or decrypting the received data, the CPU (21) accesses information stored in the mass-storage (24) to determine whether the retailer can be validated  
20 (step S21). This information includes a retailer database RDB shown schematically in Figure 11a which includes field for identifying retailers registered with the service provider, their associated terminal IDs and the corresponding retailer account with the service provider.  
25 Figure 11b shows a typical retailer account RA in a retailer account database. This account includes the retailer identity, transaction details, retailer

commission (COMM), the amount by which a retailer's account is to be debited for a transaction and a credit status.

The CPU (21) checks the validity of a retailer using  
5 the received terminal ID. If the CPU (21) finds the terminal ID in the retailer database and the retailer's account is satisfactory, the CPU (21) proceeds to step S23 to validate the card holder. At step S23, the CPU (21) accesses the card holder database SDB shown  
10 schematically in Figure 8 to determine whether the card holder is registered. If the retailer is validated and the card holder is registered, then at step S24a the CPU (21) causes a prompt for service data to be transmitted to the retailer and at step S24b the CPU 21 reads service  
15 data received from the retailer. The CPU (21) then checks at step S24c whether the service requested in the received data is a valid service by accessing a product services database held in the mass-storage device (24). This service validation check may include determining,  
20 for example, whether the monetary value by which the account is to be recharged is one of the monetary values permitted by the service provider for that card and whether or not the data received identifies the service to which the amount is to be allocated. If the answer at  
25 any of steps S21, S23 and S24c is no, then, at step S22, the CPU (21) sends via the merchant services network (250) an error message which is displayed on the display

(38) of the terminal (300). For example, where the card holder is not registered in the card holder database, the CPU (21) may send a message to be displayed by the display (38) of the terminal (300) advising the retailer  
5 that the card holder needs to register his card. Where the service is not validated, then the CPU (21) may send at step S22 a message to the display (38) requesting the retailer to re-enter the service data. It will be appreciated that the size of the display on the terminal  
10 (300) is limited and that therefore the amount of information that can be communicated back to the retailer is relatively restricted. Accordingly, in some circumstances, the error message sent to the display (38) of the terminal (300) may simply request the retailer to  
15 telephone the service provider (20) using the telephone (37) so that an operator at the service provider can elicit necessary information or sort out any problems with the retailer.

Assuming that the CPU (21) has validated the  
20 retailer, the card holder and the requested service, the CPU (21) communicates, at step S25, authority to the network provider (10) to recharge the card holder's mobile telephone account for the validated service. Details of this transaction may be stored by the service  
25 provider in it's accounting database to enable later accounting between the service and network providers.

The CPU (21) then accesses, at step S26, the

identified card holder's account in the card holder database (Figure 8) and stores details of the transaction (including the retailer identity, the time and date of the transaction, the amount and service to be recharged and the allocated authorisation code).

At step S27, the CPU (21) adds the transaction details to the retailer's account (Figure 11b).

At step S28, the CPU (21) transmits, via the merchant services network (250), a signal to the retailer terminal (300) confirming the transaction and including the allocated authorisation code.

At step S29, assuming confirmation has been received from the network provider that the recharging has been activated, the CPU (21) communicates confirmation of recharging of the account to the card holder. Generally, this information will be communicated via the card holder's mobile telephone.

As noted above, as an inducement to register and use the card, the service provider (20) may offer gifts or other promotional inducements to the card holder. Details of the available promotions will be held in a promotions database cross-referenced to the product services database and the card holder database. The card holder database SDB (see Figure 8) will, in this case, include a promotions field which identifies when a particular card holder has taken advantage of a particular promotion.



As an additional safeguard to reduce the possibility of errors, the data entered by the retailer via the keypad (34) may include, in addition to the recharge card number, the mobile telephone number of the card holder to enable the CPU (21) to do a cross-check in the card holder database SDB.

Figures 12 to 15 illustrate a modified method of topping up a pre-pay mobile telephone account where the account is not recharged automatically but the card holder is provided with a keycode to enable him to recharge the account at a later date by keying that keycode into his mobile telephone.

This method differs from that described above with reference to Figures 9 and 10 in that the service data entered by the retailer includes a code indicating that deferred recharging of the account is required. As illustrated by the flowchart shown in Figure 12, the CPU (31) of the retailer terminal (300) carries out steps S10 to S13 as described with reference to Figure 9. At step S140 the CPU (31) reads the service data input via the keypad indicating deferred top-up of the pre-pay mobile telephone account and at step S150 causes the deferred service data to be transmitted to the service provider. At step S160, the CPU (31) waits for confirmation from the service provider (20) that a keycode has been allocated for the requisite recharge amount. If no response is received then an error message is sent at

step S16a and the transaction may be repeated. When the answer at step S160 is yes, then the CPU (31) carries out steps S17 to S19 as described with reference to Figure 9.

The steps carried out by the service apparatus  
5 (200) once communication with the retailer terminal (300) has been established via the merchant services network (250) are set out in Figure 13.

The CPU (21) carries out steps S21 to S24 as described with reference to Figure 10.

10 At step S240b the CPU (21) reads the deferred service data received from the retailer and then checks at step S240c if the deferred service data is valid. This check will be similar to that described above for step S24c in Figure 10 with the addition that the CPU  
15 (21) checks to see if the service can be deferred.

If the retailer, card holder and service are validated, then the CPU (21) allocates an authorisation code and a unique keycode from a keycard database KBD (Fig.8a) for the amount and service concerned, and stores  
20 the transaction amount and service in a keycode database KDB (Figure 10a) in the mass storage device 24 in association with the allocated keycode and authorisation code at step S25a. The allocated keycode may also be stored in the recharge card database CDB in association  
25 with the card number for the transaction.

Then the CPU (21) carries out steps S26 and S27 as described with reference to Figure 10. At step S28a, the

CPU (21) transmits the keycode to the card holder's mobile telephone and at step S29a, the CPU 21 transmits a signal to the retailer terminal (300) confirming the transaction, indicating the transaction authorisation code and confirming transmission to the card holder of the keycode.

Once the card holder has received the keycode he can then recharge his pre-pay mobile telephone account or the pre-pay mobile telephone account for another telephone (for example the telephone controlled by a spouse or child) whenever he wishes. Figures 14 and 15 are flowcharts for illustrating this process.

Thus, to activate recharging using a keycode, the card holder or person whom the card holder has given the keycode such as a spouse or child, (that is the keycode holder) first establishes communication with the service provider (20) by inputting the number provided for the recharge service (this will generally be indicated on the recharge card) by the service provider (20) to a mobile phone. The mobile telephone (14) then, as shown at step S30 in Figure 14, establishes connection to the service provider number input by the user in the usual manner. Once communication has been established, the telephone user keys in the keycode provided by the service provider (20) and this is transmitted by the mobile telephone (14) to the service provider (20) at step S31.

Once the keycode has been transmitted by the mobile

telephone at step S31 in Figure 14, the CPU (21) of the service apparatus (200) determines from the signal received from the mobile telephone (14) the mobile telephone number and the transmitted keycode at step S40  
5 in Figure 15. Then, at step S41, the CPU (21) accesses the keycode database KDB, determines from the keycode database KDB the recharge amount and service and then, at step S42, communicates with the network provider (10) to give the network provider (10) authority to recharge the  
10 identified service for the identified mobile telephone number by the identified amount. The CPU (21) then updates the used field in the keycode database KDB to prevent further use of that keycode (step S43) and then transmits a message confirming recharging at step S44  
15 which is communicated to the keycode holder by the originating mobile telephone (14) at step S32 in Figure 14.

The advantages of deferred activation of the recharging are that, as noted above, the pre-paid usage  
20 need not be used for the mobile telephone associated with the recharge card and, moreover, the keycode holder can activate the pre-paid usage at any time so that if, for example, he unexpectedly depletes the existing credit in his pre-paid mobile telephone account, he can immediately  
25 top-up that account without having to visit a retailer to effect payment.

It will be appreciated from the above that the card

holder has a financial relationship only with the retailer and that there will be separate agreements in place between the retailer and card service provider (20) and between the card service provider (20) and the network provider (10). Any conventional commercial arrangement may be provided between the retailers and the service provider (20). For example, the retailer may operate on a pre-pay or a credit basis. Similarly, any conventional commercial arrangement may be provided between the service provider (20) and the network provider (10). The service provider (20) will, of course, also have a commercial relationship with the merchant services provider providing the merchant services network (250) and, again, this will be on usual commercial terms. The service provider may also have, as mentioned above, commercial arrangements with recharge card outlets such as supermarkets, magazines etc. determining the basis on which and the inducements for which the recharge card suppliers supply the cards to potential card holders.

In the embodiments described above, the retailer keys into the terminal (300) information indicating not only the amount of recharge but also the service for which the recharge is to be applied, for example whether the recharge is to be applied to call time or to service payment. The service required may be indicated by a separate code agreed with the service provider. As

another possibility, with appropriate commercial agreements between the service provider and the network provider and between the service provider and the retailer, advantage may be taken of the fact that the

5 recharge monetary value may only be integral numbers of pounds sterling and the two digits after the decimal point may be used to indicate the service required rather than to indicate a monetary value. Thus, for example, if the services available are: 1) monthly service charge;

10 2) local calls; 3) international calls, then these three different services may be allocated the codes 01, 02 and 03, respectively, for immediate recharge and the codes 11, 12 and 13, respectively for deferred recharge is required. With this system, when, for example, the card

15 holder wishes to recharge a particular service by, for example, ten pounds, then the retailer will enter 10.01, 10.02, 10.03, 10.11, 10.12 or 10.13, depending upon the service required. This has the advantage of enabling both the monetary value and the service code to be

20 transmitted in the data generally reserved for monetary values and so does not require separate prompting for and transmission of a service code. It does, however, also require that the commercial agreements between the retailers and the service provider and between the

25 service provider and the merchant services provider and between the service provider and the network provider agree that the figures after the decimal point do not

indicate monetary values and will be ignored.

In the embodiment described with reference to Figures 12 to 15 where deferred activation of the recharge is carried out using a keycode, it is assumed  
5 that the keycode is allocated by the service provider who, upon receipt of the keycode, transmits authority to the network provider to activate the recharge. It will, however, be appreciated that the keycodes could be preset keycodes allocated by the network provider for the  
10 specific amounts and services and that, upon receipt of such a keycode, the service provider would simply transmit the keycode to the network provider and the network provider would determine the service and amount of recharge from a keycode database held by the network  
15 provider.

It will also be appreciated that the recharge card service provider (20) described above and shown in Figure 1 may also administer non pre-pay mobile telephone accounts. However, the service provider (20) need not  
20 necessarily be involved in administering anything other than services for recharge card holders. In addition, the service and network provider may be a single entity so that the card holder's services are administered directly via the network provider.

25 As shown in Figure 11b, the service provider (20) keeps in the retailer database RDB a record of the transactions and a running credit/debit status which

indicates how much money is remaining in each registered retailer's account. As set out in Figure 16, each retailer is sent a statement on a periodic basis, for example once a month or once a quarter by the service provider. Thus, at step S50 in Figure 16, the CPU (21) determines whether it is time for statements to be sent to the retailer. Sending of statements may be triggered by, for example, the end of the month or the end of the quarter as determined by the central processing unit's (21) internal clock. When the answer at step S50 is yes, then the CPU (21) accesses a selected or first retailer's account at step S51 and collates the transaction details for that account at step S52 from the retailer database. At step S53, the CPU (21) determines whether, on the basis of the transactions effected during the accounting period, the retailer has sufficient funds (or credit facility if allocated to that retailer) to cover the likely transactions for the next accounting period. To do this, the CPU (21) predicts the total monetary value of the transactions for the next accounting period on the basis of the transaction history for that retailer. For example, the transactions for the next accounting period may be predicted to be not less than the highest of the three preceding accounting period transaction totals. Then, at step S54, the CPU (21) causes a statement to be sent to the retailer detailing the transactions carried out in the accounting period and indicating the amount by



which the service provider (20) considers, on the basis of the prediction made by the CPU (21) at step S53, that the retailer should top-up his account to cover transactions for the next accounting period. At step  
5 S55, the CPU (21) determines whether there are further retailers for which statements need to be prepared and if the answer is yes repeats steps S51 to S55 until a statement has been sent to each of the retailers. The statements may be sent electronically to the retailer's  
10 own computer system (not the terminal (300)) and/or the CPU (21) may cause the statements to be printed out by the printer (28) so that the service provider (20) can then mail the statement to the retailer. The retailer may top-up his account in any conventional manner as and  
15 when necessary.

The data required by the service provider (20) may be stored in any appropriate fashion in the mass storage system and need not necessarily consist of the specific databases mentioned above. Also a relational rather than  
20 flat file database may be used.

Although the above-described embodiments relate to pre-pay mobile telephones, it would be appreciated that the present invention may also be applied for different services such as a fixed telephone line service or a  
25 utility service such as the provision of gas, electricity or water. The service provider (20) may be associated with a number of different network providers providing

mobile and/or fixed telephone line services and one or more utility services. In such a case, then a card holder may use a single recharge card for recharging his account. In this case, the service data required from  
5 the retailer will also need to indicate which of the different services (fixed telephone, mobile telephone, gas, electricity or water for example) the recharge is to be applied to. The above examples relate to pre-payment for services. The present invention may, however, also  
10 be applied where a customer wishes to pay in cash for a service or product provided by somebody other than the person to whom the customer is making the cash payment, for example to enable payment (including pre-payment) of bills such as credit card bills, mail order catalogue  
15 bills, council tax, water rates and TV licence bills at a retail outlet rather than at a bank or post office. Thus a product or service provider such as credit card company or mail order catalogue company may issue a recharge card whereby the card holder can, whilst in a  
20 retailer such as a petrol station, supermarket, greengrocer, general store or the like having an EFTPOS terminal and an agreement with the credit card or mail order catalogue company, also effect payment of his credit card or catalogue account by paying the retailer  
25 with the desired amount by cash or cheque and handing the retailer his recharge card so that the retailer can notify the credit card company that payment has been effected in a manner analogous to that described above

for topping up a mobile telephone account. The credit card or catalogue company would then collect (minus appropriate commission) the amount paid from the account of the retailer in any conventional manner.

5        In the deferred recharge embodiments described above the keycode is transmitted to the customer's mobile telephone. As another possibility the keycode may be printed on the receipt and used by the customer in combination with a pin code allocated to him by the  
10       service provider to activate the recharge of the account, or the keycode may simply be posted to the customer by the service provider. Either of these latter options enables use of the system to top up or credit an account where the customer does not have a mobile telephone. In  
15       the above-described embodiments, the remote transaction terminal (300) is an EFTPOS terminal that uses a card carrying a magnetic strip. However, the present invention may be applied to other forms of remote transaction terminal and to other forms of cards that  
20       carry data in different ways, for example optically stored or stored in integrated circuit chips such as in so-called smart cards.

         It will be appreciated that where only one service is available, for example pre-payment for mobile  
25       telephone calls, then no service code will be required. In the above-described embodiments, the data carried by the magnetic strip on the recharge card represents the card number. It will, however, be appreciated that the

data carried by the magnetic strip may, for security purposes, be a different number from the card number and be encrypted for transmission to the service provider so that only the service provider is aware of the actual  
5 number carried by the magnetic strip. In such a case, the recharge card database will include a field for containing the number hidden on the magnetic strip and associating that with the card number.

CLAIMS:

1. A system for enabling crediting of an account, comprising transaction data communication apparatus  
5 arranged to be provided at a retail outlet, the transaction data communication apparatus comprising a card reader for reading an identity code from a card, an input device for enabling a retailer to input data representing the monetary amount a customer presenting  
10 the card wishes to credit to the account, and communication means for sending a signal carrying transaction data comprising card identity code data representing the card identity code read by the card reader and amount data representing said amount; and  
15 transaction data receiving apparatus arranged to be provided at an account service provider, the transaction data receiving apparatus comprising a database arranged to associate each of a number of accounts with a respective different one of a number of identity codes,  
20 receiving means for receiving transaction data communicated by said communication means, means for identifying from the database the account associated with the card identity code represented by card identity code data received by the receiving means, and means for  
25 enabling crediting of the identified account with the amount represented by the amount data received by the receiving means.

2. A system for enabling crediting of a pre-pay mobile telephone account, comprising:

transaction data communication apparatus arranged to be provided at a retail outlet, the transaction data communication apparatus comprising a card reader for  
5 reading an identity code from a card, an input device for enabling a retailer to input data representing the amount a customer presenting the card wishes to credit to the pre-pay mobile telephone account, and communication means  
10 for sending a signal carrying transaction data comprising identity code data representing the card identity code read by the card reader and amount data representing said amount; and

transaction data receiving apparatus arranged to be  
15 provided at a pre-pay mobile telephone service provider, the transaction data receiving apparatus comprising a database arranged to associate each of a number of pre-pay mobile telephone accounts with a respective different one of a number of identity codes, receiving means for  
20 receiving transaction data communicated by said communication means, means for identifying from the database the pre-pay mobile telephone account associated with the card identity code represented by identity code data received by the receiving means, and means for  
25 enabling crediting of the identified pre-pay mobile telephone account with the amount represented by the amount data received by the receiving means.

3. A system according to claim 1 or 2, wherein said transaction data receiving means comprises means for communicating with said transaction data communication means to confirm crediting of said account with said amount.

4. A system according to claim 1, 2 or 3, wherein said transaction data receiving means database is arranged to indicate a retailer's status and said transaction data receiving means comprises means for checking the retailer's credit before crediting said account with said amount.

5. A system according to claim 1, 2, 3 or 4, wherein said transaction data receiving means database is arranged to store details of transactions together with information identifying the retailer associated with each transaction.

6. A system according to any one of the preceding claims, wherein said transaction data receiving means comprises means for periodically providing a retailer with a statement of transactions effected from the retailer's transaction data communication apparatus.

7. A system according to any one of the preceding claims, wherein said crediting enabling means comprises

means for communicating with an account provider to  
authorise crediting means of said account.

8. A system for enabling topping up of funds,  
5 comprising:

transaction data communication apparatus arranged to  
be provided at a retail outlet, the transaction data  
communication apparatus comprising a card reader for  
reading an identity code from a card, an input device for  
10 enabling a retailer to input data representing the amount  
by which a customer presenting the card wishes to top up  
funds, and communication means for sending a signal  
carrying transaction data comprising identity code data  
representing the identity code read by the card reader  
15 and amount data representing said amount; and

transaction data receiving apparatus arranged to be  
provided at an account service provider, the transaction  
data receiving apparatus comprising a database arranged  
to contain a number of different and unique keycodes,  
20 receiving means for receiving transaction data  
communicated by said communication means, means for  
checking the validity of an identity code, means for  
associating a keycode from the database with said amount  
in response to receipt of a valid identity code, and  
25 means for communicating that keycode to the customer  
presenting the card to enable topping up of the funds by  
using the keycode.



9. A system for enabling crediting of a pre-pay mobile telephone account, comprising transaction data communication apparatus arranged to be provided at a retail outlet, the transaction data communication apparatus comprising:

5 a card reader for reading an identity code from a card, an input device for enabling a retailer to input data representing the amount a customer presenting the card wishes to credit to a pre-pay mobile telephone account, and communication means for sending a signal carrying transaction data comprising identity code data representing the identity code read by the card reader and amount data representing said amount; and

15 transaction data receiving apparatus arranged to be provided at a pre-pay mobile telephone service provider, the transaction data receiving apparatus comprising a database arranged to contain a number of different and unique keycodes, receiving means for receiving transaction data communicated by said communication means, means for checking the identity code, means for associating a keycode from the database with said amount in response to receipt of a valid identity code, and means for communicating the selected keycode to the customer presenting the card to enable activation of

20 crediting of a pre-pay mobile telephone account with the amount represented by the amount data received by the receiving means by use of the keycode.

10. A system according to claim 9, wherein the communicating means is arranged to transmit the keycode to a mobile telephone number associated with the card presented by the customer.

5

11. A system according to claim 8, 9 or 10, wherein said transaction data receiving means database is arranged to indicate a retailer's status and said transaction data receiving means comprises means for checking the  
10 retailer's status before communicating a keycode to the customer.

12. A system according to claim 8, 9, 10 or 11, wherein said transaction data receiving means database is  
15 arranged to store details of transactions together with information identifying the retailer associated with each transaction.

13. A system according to claim 8, 9, 10, 11 or 12,  
20 wherein said transaction data receiving means comprises means for periodically providing a retailer with a statement of transactions effected from the retailer's transaction data communication apparatus.

25 14. A system according to any one of claims 8 to 13, wherein said transaction data receiving apparatus comprises means for receiving a keycode from a mobile

telephone, means for determining from the database the amount associated with that keycode and means for enabling crediting of the pre-pay mobile telephone account associated with that mobile telephone with said amount.

15. A system according to claim 14, wherein said crediting enabling means comprises means for communicating with an account provider to authorise crediting means of said account.

16. A system according to any one of the preceding claims, wherein said transaction data communication apparatus comprises means for providing the customer with a receipt.

17. A system according to any one of the preceding claims, wherein the transaction data receiving means comprises means for identifying in the amount data first and second numbers separated by a decimal point and means for identifying the first number as a monetary amount by which topping up is to be effected and the second number as a code representing a service or product to which the monetary amount is to be applied.

18. Apparatus arranged to facilitate crediting or topping up of funds, comprising:

a card reader for reading an identity code from a card;

an input device for enabling a retailer to input data representing the amount by which the cardholder wishes to top up funds; and

communication means connected to a database associating identity codes with customers for enabling the funds associated with the identity code read by the card reader to be topped up by the amount entered using the input device.

19. Apparatus arranged to facilitate crediting or topping up of a pre-pay mobile telephone account, comprising:

a card reader for reading an identity code from a card;

an input device for enabling a retailer to input data representing the amount the cardholder wishes to credit to the pre-pay mobile telephone account; and

communication means connected to a database associating identity cards with customer accounts for enabling the account associated with the identity code read by the card reader to be credited with the amount entered using the input device.

25

20. Apparatus arranged to facilitate topping up of funds, comprising:

a card reader for reading an identity code from a card;

an input device for enabling a retailer to input data representing the amount by which the cardholder  
5 wishes to top up funds; and

communication means connected to a database containing a number of different and unique keycodes for enabling the amount to be associated with a keycode from the database, which keycode can later be used to activate  
10 topping up of funds with said amount.

21. Apparatus arranged to facilitate crediting or topping up of a pre-pay mobile telephone account, comprising:

15 a card reader for reading an identity code from a card;

an input device for enabling a retailer to input data representing the amount the cardholder wishes to credit to a pre-pay mobile telephone account; and

20 communication means connected to a database containing a number of different and unique keycodes for enabling the amount to be associated with a keycode from the database, which keycode can later be used to activate crediting of a pre-pay mobile telephone account with said  
25 amount.

22. Apparatus according to any one of claims 18 to 21,

comprising means for providing the customer with a receipt.

23. Apparatus for enabling topping up of funds in  
5 accordance with a signal received from a remote terminal  
having a card reader for reading an identity code from a  
card and an input device for enabling input of data  
representing the amount by which the cardholder wishes to  
top up funds, the apparatus comprising:

10 a database associating each of a number of customers  
with a respective different one of a number of card  
identity codes;

receiving means arranged to connect to the remote  
terminal to receive transaction data comprising identity  
15 code data representing a card identity code read by the  
card reader and amount data representing an amount input  
using the input device;

means for identifying from the database the customer  
associated with the card identity code represented by  
20 identity code data received by the receiving means; and

means for enabling crediting of the identified  
account with the amount represented by the amount data  
received by the receiving means.

25 24. Apparatus for enabling crediting or topping up of a  
pre-pay mobile telephone account in accordance with a  
signal received from a remote terminal having a card

reader for reading an identity code from a card and an input device for enabling input of data representing the amount by which the cardholder wishes to top up or credit the pre-pay mobile telephone account, the  
5 apparatus comprising:

a database associating each of a number of pre-pay telephone accounts with a respective different one of a number of identity codes;

receiving means arranged to connect to the remote  
10 terminal to receive transaction data comprising identity code data representing an identity code read by the card reader and amount data representing an amount input using the input means;

means for identifying from the database the pre-pay  
15 mobile telephone account associated with the identity code represented by identity code data received by the receiving means; and

means for enabling topping up or crediting the identified pre-pay mobile telephone account with the  
20 amount represented by the amount data received by the receiving means.

25. Apparatus according to claim 23 or 24, further comprising means for communicating with said remote  
25 terminal to confirm crediting of said account with said amount.

26. Apparatus according to claim 23, 24 or 25, wherein said database is arranged to indicate the status of a retailer responsible for the remote terminal and wherein the apparatus also comprises means for checking the  
5 retailer's status before crediting said account with said amount.

27. Apparatus according to claim 23, 24, 25 or 26, wherein said database is arranged to store details of  
10 transactions together with information identifying the remote terminal associated with each transaction.

28. Apparatus according to any one of claims 23 to 27 comprising means for periodically providing to a retailer  
15 responsible for the remote terminal a statement of transactions effected from that remote terminal.

29. Apparatus according to any one of claims 23 to 28, wherein said crediting enabling means comprises means for  
20 communicating with an account provider to authorise crediting means of an account.

30. Apparatus for enabling topping up of funds in accordance with a signal received from a remote terminal  
25 having a card reader for reading an identity code from a card and an input device for enabling input of data representing the amount by which the cardholder wishes to



top up funds, the apparatus comprising:

receiving means connected to the remote terminal to  
receive transaction data comprising identity code data  
representing a card identity code read by the card reader  
5 and amount data representing an amount input using the  
input means;

means for allocating a keycode to said amount; and  
means for communicating that keycode to the  
cardholder to enable activation of topping up of funds by  
10 using the keycode.

31. Apparatus for enabling crediting of funds to a pre-  
pay mobile telephone account in accordance with a signal  
received from a remote terminal having a card reader for  
15 reading an identity code from a card and an input device  
for enabling input of data representing the amount the  
cardholder wishes to credit to the pre-pay mobile  
telephone account, the apparatus comprising:

receiving means connected to the remote terminal to  
20 receive transaction data comprising identity code data  
representing an identity code read by the card reader and  
amount data representing an amount input using the input  
means;

means for associating a keycode with said amount in  
25 response to receipt of a valid identity code; and

means for communicating that keycode to the  
cardholder for enabling activation of crediting of a

pre-pay mobile telephone account with said amount by use of the keycode.

32. Apparatus according to claim 30 or 31, wherein the  
5 communicating means is arranged to transmit the allocated  
keycode to a mobile telephone number associated with the  
card.

33. Apparatus according to claim 30, 31 or 32,  
10 comprising a database arranged to indicate a retailer's  
status and wherein said apparatus comprises means for  
checking the retailer's status before communicating a  
keycode to the customer.

15 34. Apparatus according to claim 30, 31, 32 or 33,  
comprising a database arranged to store details of  
transactions together with information identifying the  
retailer responsible for the remote terminal associated  
with each transaction.

20 35. Apparatus according to any one of claims 30 to 34,  
comprising means for periodically providing a retailer  
responsible for the remote terminal with a statement of  
transactions effected from that terminal.

25 36. Apparatus according to any one of claims 30 to 35,  
comprising means for receiving a keycode from a mobile

telephone, means for determining the amount associated with that keycode and means for enabling crediting of an account with said amount.

- 5 37. Apparatus according to claim 36, wherein said crediting enabling means comprises means for communicating with an account provider to authorise crediting means of said account.

10

38. Apparatus according to claim 36 or 37 when dependent on claim 31, wherein said crediting means is arranged to credit said amount to an account associated with the mobile telephone number from which the keycode was  
15 received.

39. Apparatus according to any one of claims 23 to 38, comprising means for identifying in the amount data first and second numbers separated by a decimal point and means  
20 for identifying the first number as a monetary amount by which topping up is to be effected and the second number as a code representing a service or product to which the monetary amount is to be applied.

- 25 40. Apparatus for enabling activating of topping up of funds using a keycode, comprising a database of keycodes and associated monetary amounts, means for receiving a

keycode, processor means for checking whether the keycode is in the database and, if so, determining the monetary amount associated with the keycode and means for enabling topping up of funds by said determined monetary amount.

5

41. Apparatus according to claim 40, wherein said topping up enabling means is arranged to communicate with a fund holder to activate topping up of the funds.

10 42. A package containing a mobile telephone operable to function using a pre-pay mobile telephone account and a card carrying identity code data for enabling topping up of the pre-pay mobile telephone account using a system in accordance with any one of claims 1 to 17 or apparatus in  
15 accordance with any one of claims 18 to 41.

43. A storage medium carrying processor implementable instructions for causing processor means to become configured to provide a processing function of apparatus  
20 in accordance with any one of claims 18 to 41 or of a transaction data communication apparatus or a transaction data receiving apparatus as set out in any one of claims 1 to 17.

25 44. A signal carrying processor implementable instructions for causing processor means to become configured to provide a processing function of apparatus

in accordance with any one of claims 18 to 41 or of a transaction data communication apparatus or a transaction data receiving apparatus as set out in any one of claims 1 to 17.



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Claims searched: 1 to 44

Examiner: Mark Bell  
Date of search: 7 April 2000

**Patents Act 1977**  
**Search Report under Section 17**

**Databases searched:**

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:  
UK CI (Ed.R): H4K (KEC, KED, KEX)  
Int CI (Ed.7): H04M 17/00  
Other: ONLINE: WPI, EPODOC, PAJ

**Documents considered to be relevant:**

Category	Identity of document and relevant passage	Relevant to claims
X	WO 95/34161 A1 CALL PROCESSING INC (see page 2 lines 19 to 34)	1 at least
X	US 5991748 AMERICAN EXPRESS TRAVEL RELATE	1 at least
X	US 5777305 INCOMM	1 at least

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.